1. A optical amplification method comprising the steps of:
receiving an optical signal for amplification;
selecting, a pre-programmed filter from a plurality of such filters;
applying, the selected filter to the received signal; and
amplifying the filtered signal.

2. The amplification method according to claim 1 further comprising the step of:
collecting control system input sufficient to select filtering characteristics.

3. The amplification method according to claim 1 wherein the pre-programmed filter is one of a set of predetermined filter profiles wherein each one of the set has an arbitrary shape.

4. A optical amplification method comprising the steps of:
receiving an optical signal for amplification;
amplifying the received signal;
selecting, a pre-programmed filter from a plurality of such filters; and
applying the amplified signal to the selected filter.

5. The amplification method according to claim 5 further comprising the step of:
amplifying the filtered signal.

6. The amplification method according to claim 5 further comprising the step of:
collecting control system input sufficient to select filtering characteristics.

7. The amplification method according to claim 5 wherein the pre-programmed filter is one of a set of predetermined filter profiles wherein each one of the set is an arbitrary shape.

8. A method of controlling/maintaining gain in an optical amplifier comprising the steps of:

collecting, control system input pertaining to a received optical signal, sufficient to select a pre-programmed filter from a plurality of such filters;

selecting, the pre-programmed filter; and

applying the signal to the filter;

such that the gain of the optical amplifier substantially achieves a desired profile as a function of optical signal wavelength.

9. The method according to claim 8 wherein the selected filter is an arbitrary, pre-determined one wherein the pre-programmed filter is one of a set of predetermined filter profiles wherein each one of the set has an arbitrary shape..

10. The method according to claim 9 further comprising the step of:

adjusting dynamically the spectral tilt of the gain profile of optical amplifier.

11. The method according to claim 10 wherein the dynamic adjusting is performed as a function of channel loading.

12. The method according to claim 11 wherein the dynamic adjusting is performed as function of input power to the amplifier.

13. The method according to claim 8 in which the control system information pertaining to the optical signal includes a measure of the gain at one or more erbium stages of the amplifier.

14. The method according to claim 8 further comprising the step of:

blocking of one or more wavelengths by the optical amplifier as a function of the input to the control system.

15. An optical filter comprising:
a pre-programmed fixed optical spatial filter;
an optical system for dispersing an input spectrum on to said filter wherein said optical system includes:
a lateral position control system for controlling the lateral position of the dispersed spectrum on the pre-programmed fixed optical spatial filter positioned at the demultiplexed spectral plane; and
an optical system for collecting the dispersed, filtered spectrum and directing it as an output spectrum.

16. The optical filter according to claim 15 wherein said pre-programmed fixed optical spatial filter is a 2-D optical phase filter.

17. The optical filter according to claim 15 wherein said pre-programmed fixed optical spatial filter is an amplitude filter.

18. The optical filter according to claim 15 wherein said pre-programmed fixed optical spatial filter is a reflection filter.

19. The optical filter according to claim 15 wherein said lateral position control system includes a tilting reflective surface to control the lateral position of the dispersed spectrum.

20. The optical filter according to claim 15 wherein said lateral position control system includes a transmissive linear phase controller to control the lateral position of the dispersed spectrum.

21. The optical filter according to claim 15 including an input fiber lateral shifter for controlling the position of the dispersed spectrum.

22. The optical filter according to claim 15 including a filter shifter for controlling the position of the dispersed spectrum.

23. The optical filter according to claim 15 further comprising a detector for detecting the position of the dispersed spectrum on the optical filter.

24. An optical amplifier comprising:

means for receiving an optical signal;

means for selecting a pre-programmed filter from a plurality of such filters;

means for applying the selected filter to the optical signal; and

means for amplifying the optical signal.

25. The optical amplifier according to claim 24 further comprising:

means for collecting control system information sufficient to select the pre-programmed filter.

26. The optical filter according to claim 25 wherein the pre-programmed filter is one of a set of predetermined filter profiles wherein each one of the set has an arbitrary shape.